

CLAIMS

1. (Currently amended) An apparatus comprising:

virtual machine means, instantiated in managed code to execute with a runtime loader, for executing first and second assemblies of one or more files instantiated in the managed code;

means for making a call for access by the first assembly of one or more of the files instantiated in the managed code to the second assembly of one or more of the files instantiated in the managed code at Just-In-Time (JIT) compilation time;

a JIT compiler for compiling each of the first and second assemblies into native code for execution as native code, wherein during compilation, based upon a determination that it is unknown whether the call from the first assembly to the second assembly should be permitted, the JIT compiler is configured to insert a runtime stub into the call before compiling the first and second assemblies;

means for intercepting the call from the first assembly to the second assembly; and

means, based upon a user identification (ID) for at least one of the first and second assemblies of the one or more files, for determining, at runtime, access privileges of the first assembly of the one or more files to the second assembly of the one or more files.

2. (Currently amended) The apparatus as defined in Claim 1, further comprising:

an execution engine, instantiated in a native code, to execute the virtual machine in runtime;

~~a compiler to compile each of the first and second assemblies into native code for execution as native code; and~~

an operating system in native code to be executed with one or more of the compiled first and second assemblies.

3. (Previously Presented) The apparatus as defined in Claim 1, further comprising:

execution engine means, in a native code portion, for executing the virtual machine means in runtime; and

means, in the native code portion, for providing an operating system to be executed with the virtual machine means.

4. (Previously Presented) The apparatus as defined in Claim 1, wherein the means for determining access privileges comprises:

means for preventing the access of the first assembly to the second assembly when the determination based upon the ID for at least one of the first and second assemblies is unfavorable based upon predetermined criteria for the respective IDs.

5. (Previously Presented) The apparatus as defined in Claim 1, wherein the means for determining access privileges comprises:

means for preventing the access of the first assembly to the second assembly when the ID for the first assembly does not match the ID for the second assembly based upon a predetermined match criteria for the respective IDs.

6. (Previously Presented) The apparatus as defined in Claim 1, wherein the means for determining access privileges comprises:

means for preventing the access of the first assembly to the second assembly when the first assembly is in a first application domain and the second assembly is in a second application domain, and the first and second application domains do not match based upon a predetermined match criteria for application domains.

7. (Currently amended) The apparatus as defined in Claim 3, wherein:
the means for determining access privileges comprises means for permitting the access of the first assembly to the second assembly when the ID for the first assembly matches the ID for the second assembly based upon a predetermined match criteria for the respective IDs; and

the apparatus further comprises:

~~means for compiling at least one of the first and second assemblies from an intermediate language code and metadata into native code;~~

means for loading the native code with a Common Language Runtime (CLR) loader in the native code portion to load the compiled native code; and

means for executing the compiled native code in the native code portion, wherein the first assembly accesses the second assembly.

8. (Previously Presented) The apparatus as defined in Claim 1, wherein the means for determining access privileges comprises:

means for permitting the access of the first assembly to the second assembly when previous access to said second assembly by said first assembly had been permitted.

9. (Previously Presented) The apparatus as defined in Claim 8, wherein the previous access had been permitted following a prior determination that was favorable based upon a predetermined comparison criteria for the respective IDs.

10. (Currently amended) The apparatus as defined in Claim 1, further comprising:

~~means for compiling at least one of the first and second assemblies into native code;~~

verifying means, prior to determining access privileges, for determining whether the ID is accurate for the first and second assemblies;

means, upon the determination by the accuracy means that either of said IDs is inaccurate, for:

permitting the means for compiling to compile at least one of the first and second assemblies into native code; and

delaying the means for determining access privileges until the ID is accurate for the first and second assemblies.

11. (Previously Presented) The apparatus as defined in Claim 10, wherein the verifying means is for further determining that the ID is accurate for the first and second assemblies at a runtime for the native code.

12. (Previously Presented) The apparatus as defined in Claim 10, wherein the means for delaying the means for determining access privileges is for further halting the delay at a runtime for the native code.

13. (Original) The apparatus as defined in Claim 1, wherein the managed code portion further comprises one or more files associated with user code that, when compiled into an intermediate language code and metadata generated by a language compiler, are represented by the first and second assemblies in respective application domains.

14. (Previously Presented) The apparatus as defined in Claim 3, wherein the execution engine means in the native code portion comprises a compiler to compile each said assembly into native code for execution by the native code portion.

15. (Currently amended) The apparatus as defined in Claim 3, wherein the execution engine means in the native code portion ~~further~~ comprises:

~~a Just In Time (JIT) compiler to compile each said assembly into native code at runtime; and~~

a CLR loader to load the compiled native code for execution by the native code portion.

16. (Original) The apparatus as defined in Claim 3, further comprising:
means, in the native code portion, for forming a response to the call; and
means for returning the response to the first assembly in the managed code portion.

17-46. (Cancelled).

47. (Previously Presented) A server comprising:
a virtual machine, instantiated in managed code to execute with a runtime loader, to execute first and second assemblies of one or more files instantiated in the managed code, each of the first assembly and the second assembly being registered as a server object with the server;

a first module to make a call for access by the first assembly to the second assembly at Just-In-Time (JIT) compilation time;

an intercept module to intercept the call from the first assembly to the second assembly;

a second module, based upon user identification (ID) for at least one of the first and second assemblies, to determine access privileges of the first assembly to the second assembly; and

a JIT compiler module, based upon a first determination made at the second module that it is unknown whether the call from the first assembly to the second assembly should be permitted, to perform actions comprising:

inserting a runtime stub into the call; and

compiling the first assembly and the second assembly in the managed code into native code for execution as native code, wherein at runtime when the native code of the first assembly and the second assembly is executed at the server, the second module of the server is configured to make, based upon the user ID for each of the first assembly and the second assembly at the runtime, a second determination of whether the call by the first assembly to the second assembly shall be permitted at the runtime.

48. (Previously Presented) The apparatus as defined in Claim 47, further comprising:

an execution engine, instantiated in a native code, to execute the virtual machine in runtime; and

an operating system in native code to be executed with one or more of the compiled first and second assemblies.

49. (New) A method implemented by a computing device, the method comprising the steps of:

identifying a cross assembly call from a first assembly of one or more of the files instantiated in the managed code to a second assembly of one or more of the files instantiated in the managed code at a Just-In-Time (JIT) compilation time, wherein access privilege of the cross assembly call has not been verified based upon an identification (ID) for at least one of the first and second assemblies of the one or more files;

making a first determination at the JIT compilation time that it is unknown whether the call from the first assembly to the second assembly should be permitted, wherein the first determination is based upon the ID for at least one of the first and second assemblies;

inserting a runtime stub to the cross assembly call in the managed code to postpone a verification of the cross assembly call at the JIT compilation time, the runtime stub being configured to be used to make a call back at runtime;

compiling the first and second assemblies in the managed code into native code for execution as native code;

intercepting the cross assembly call at runtime; and

making a second determination at runtime to decide, based upon the ID for at least one of the first and second assemblies at runtime, whether the call by the first assembly to the second assembly shall be permitted.

50. (New) A method as recited in claim 49, further comprising preventing the access of the first assembly to the second assembly when the second determination based upon the ID for at least one of the first and second assemblies is unfavorable based upon predetermined criteria for the respective IDs.

51. (New) A method as recited in claim 49, further comprising preventing the access of the first assembly to the second assembly when the ID for the first assembly does not match the ID for the second assembly based upon a predetermined match criteria for the respective IDs.

52. (New) A method as recited in claim 49, further comprising preventing the access of the first assembly to the second assembly when the first assembly is in a first application domain and the second assembly is in a second application domain, and the first and second application domains do not match based upon a predetermined match criteria for application domains

53. (New) A method as recited in claim 49, further comprising permitting the access of the first assembly to the second assembly when the ID for the

first assembly matches the ID for the second assembly based upon a predetermined match criteria for the respective IDs.

54. (New) A method as recited in claim 49, further comprising permitting the access of the first assembly to the second assembly when previous access to said second assembly by said first assembly had been permitted.

55. (New) A method as recited in claim 49, further comprising launching a Common Language Runtime (CLR) loader to the first and second assemblies in managed code.

56. (New) A method as recited in claim 49, further comprising verifying the ID is accurate for the first and second assemblies.

57. (New) A method as recited in claim 56, wherein the step of verifying comprises verifying the ID is accurate for the first and second assemblies at runtime.

58. (New) One or more computer readable medium having stored thereon a plurality of instructions that, when executed on a computing device having one or more processors, cause the one or more processors to implement the method as recited in claim 49.